

REMARKS

Applicants request reconsideration of the subject application in view of the foregoing amendments and the following remarks.

Claims 23 - 33, 35 and 38 - 43 are pending, of which claims 25 - 27, 40, 42 and 43 have been withdrawn. Claims 34, 36 and 37 have been canceled. Claims 23, 24, 35 and 39 are amended herein to even more clearly define the invention in a manner that distinguishes over the art.

Claims 23, 24, 28-39 and 41 stand rejected under 35 USC § 112, second paragraph, as allegedly being indefinite. Although Applicants believe that claim 23, as originally presented, was sufficiently clear, Applicants have amended the claim to even more explicitly delineate the distinction between the preamble and the body.

Withdrawal of the rejection is respectfully requested.

Claims 23, 24, 28-30 and 34-36 stand rejected under 35 USC § 102(b) as allegedly being anticipated by GB 2 162 283 A (GB '283). Claims 23, 24, 28-30 and 34-36 stand rejected under § 102(b) as allegedly being anticipated by GB 2 134 209 A (GB '209). Claims 23, 28, 29, 33 and 41 stand rejected under § 102(b) as allegedly being anticipated by U.S. Patent No. 1,164,115 (Pearson). Claims 32 and 33 stand rejected under 35 USC § 103(a) as allegedly being unpatentable over any one of the foregoing in view of either of U.S. Patent Nos. 2,326,670 (Patterson, Jr.) and 3,910,559 (Sapozhnikov et al.). Claims 37 and 38 stand rejected under § 103(a) as allegedly being unpatentable over Pearson in view of U.S. Patent No. 3,279,762 (Bruns). Claim 39 stands rejected under § 103(a) as allegedly being unpatentable over any one of GB '283, GB '209 and Pearson. These rejections are respectfully traversed, and reconsideration is requested.

As amended, independent claim 23 recites a traction drive for an elevator system, the elevator system including a car and a counterweight. The traction drive includes a tension member interconnecting the car and counterweight, and a traction sheave driven by a machine. The tension member includes a load carrying rope and a polyurethane coating encasing the load carrying rope. An engagement surface is defined on the polyurethane coating by the width dimension of the tension member. The tension member has an aspect ratio, defined as the ratio of width w relative to

thickness t , of greater than one. The traction sheave includes a traction surface configured to receive the engagement surface of the tension member such that the traction between the sheave and the tension member moves the car and counterweight.

None of the cited documents is understood to disclose or suggest at least the feature recited in claim 23 regarding a polyurethane coating encasing the load carrying rope. GB '209 recites a rubber or rubber-like material (such as artificial rubber or PVC). GB '283 refers primarily to GB '209 for the properties of the rope, but refers to an elastomeric material and to a resilient rubber-like covering. Pearson discloses flat, steel straps.

Further, according to Applicants' understanding GB '283 is not clear as to whether it relates a traction drive or to a drum drive winding machine. For example, at page 2, lines 54-59, GB '283 recites that the rubber-like covering retains the original grease in the rope. Such an arrangement is believed to be antithetical to traction drives because it would destroy the torque capability between the covering and the rope. Thus, whereas in the claimed invention traction between the sheave and the tension member moves the car and counterweight, the arrangement in GB '283 would appear to require the end of the elevator-suspending rope be affixed to a drum on which the rope is wound, perhaps with a similar counterweight-suspending rope unwinding simultaneously for load balancing. Thus, GB '283 appears not to disclose or suggest the claimed feature relating to traction between the sheave and tension member moving the car and counterweight.

GB '209, on the other hand, discloses that the rubber-like material is molded with teeth (page 1, line 82) that cooperate with teeth of the drive wheel. Thus, whereas in the claimed invention traction between the sheave and the tension member moves the car and counterweight, in GB '209 it is the positive engagement between the teeth of the rope and the drive wheel. Incidentally, a positive engagement arrangement could cause the car or counterweight to not break traction when the car or counterweight is at the top of the hoistway and possibly be pulled into the overhead of the hoistway.

It should be noted that flat, steel straps, such as those suggested in Pearson, are not used in elevator systems for several reasons. First, in flat straps formed from a continuous material, however, any minor cracks or fractures (which are inevitable due

to the stresses and environmental conditions to which an elevator rope is exposed) would propagate through the entire strap (rather than one of many wires in a wound rope) and result in a catastrophic failure. Second, unlike a rope wound from a plurality of thin wires, the flexibility of a flat, steel strap is dictated directly by the actual modulus of elasticity of the rope material. This decreased flexibility would result in a very large sheave and very large torque requirements for the drive machine. Third, a steel strap, since it is continuous, will be subjected to high tensile stress on one side of the strap and high compressive stress on the opposite side of the strap. These repetitive stresses lead to increased fatigue and cracking of the strap, which, as discussed above, would lead to a catastrophic failure. Fourth, there are no spaces to accommodate contaminants, which can lead to a dramatic reduction in traction. Conversely, too much traction can occur with dry metal-to-metal contact, which, as in the case of positive engagement, could cause the car or counterweight to be pulled into the overhead of the hoistway. Unlike with conventional wire ropes, however, lubrication cannot be used to maintain an appropriate range of traction because it would effectively eliminate any traction.

None of the remaining cited documents overcome the above-noted deficiencies in the teachings of GB '283, GB '209 or Pearson.

Therefore, whether considered individually or in combination, the cited art fails to disclose or suggest salient features recited in claim 23. Thus, claim 23 is submitted to be allowable over the art.

The dependent claims, which are submitted to be allowable for the same reasons, also include features in addition to those recited in their respective base claims. Further independent consideration of the dependent claims is requested.

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Respectfully submitted,

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